WHAT IS CLAIMED IS:

1. Heart valve leaflet removal apparatus comprising a pair of cooperating A valve prothesis delivery apparatus comprising:

a valve prothesis support having a proximal portion and a distal portion and a plurality of fasteners ejectably mounted therein, said distal portion being adapted to be releasably coupled to the valve prosthesis.

2. Heart valve leaflet removal apparatus comprising a pair of cooperating cutting elements adapted for cutting and removing leaflets from the aortic valve in a patient's heart, one of said cutting elements being rotatably coupled to the other of said pair of cutting elements; a holder coupled to one of said cutting elements and adapted to receive the cut leaflets; and said cutting elements and holder being configured for delivery to the aortic valve leaflets through an aortotomy formed in the patient's aorta.

3. The apparatus of claim 1 wherein said pair of cooperating cutting elements are radially collapsible.

4. The apparatus of claim 1 wherein said pair of cooperating cutting elements have a first radial dimension when in a first state and a second radial dimension when in a second state.

5. The apparatus of claim 3 further including a sheath surrounding at least a portion of said cutting elements and retaining said cutting elements in said first state.

6. The apparatus of claim 4 wherein said cutting elements have a memory shape, are deformed when in said first state, and assume their memory shape when in said second state.

7. The apparatus of claim 5 wherein said cutting elements comprise spiral shaped elements.

8. The apparatus of claim 1 wherein said holder has a conical configuration.

9. The apparatus of claim 1 wherein said cutting elements comprise an annular cutting element and an annular cutting surface.

10. The apparatus of claim 8 wherein said holder has a conical configuration.

11. The apparatus of claim 8 wherein said cutting elements are biased away from one another.

12. A heart valve repair system comprising:
heart valve leaflet removal apparatus comprising a pair of cooperating cutting elements adapted for cutting and removing leaflets from an aortic valve in a patient's heart, one of said cutting elements being rotatably coupled to the other of said pair of cutting elements, a holder coupled to one of said cutting elements and adapted to receive the cut leaflets, said cutting elements and holder being configured for delivery to the aortic valve leaflets through an aortotomy formed in the patient's aorta; and

heart valve prosthesis delivery apparatus for placing an aortic valve prosthesis in the patient's heart comprising an aortic valve prosthesis support having a proximal portion and a distal portion and a plurality of fasteners ejectably mounted therein, said distal portion being adapted to be releasably coupled to the aortic valve prosthesis, and said valve prosthesis support being configured for delivery to the heart through the aortotomy formed in the patient's aorta.

13. The system of claim 12 wherein the aortic valve prosthesis support is adapted to support a prosthetic stentless valve, the system further including a balloon adapted to be placed in the prosthetic stentless valve and urge a portion of the prosthetic valve against the inner wall of the aorta of the patient so that when adhesive is applied to an exterior portion of the prosthetic valve and the prosthetic valve urged against the inner wall of the aorta, said exterior portion can adhere to the inner wall of the aorta.

14. The system of claim 12 further including a prosthetic valve configured to be coupled to said aortic valve prosthesis support.

15. A replacement valve delivery system comprising:

heart valve prosthesis delivery apparatus for placing an aortic stentless valve prosthesis in a patient's heart comprising an aortic stentless valve prosthesis support having a proximal portion and a distal portion and a plurality of fasteners ejectably mounted therein, said distal portion being adapted to be releasably coupled the aortic valve prosthesis, and said valve prosthesis support being configured for delivery to the heart through an aortotomy formed in the patient's aorta; and

a balloon adapted to be placed in the valve prosthesis and urge at least a portion of the valve prosthesis against the inner wall of the aorta of the patient so that when adhesive is applied to an exterior portion of the valve prosthesis and the valve prosthesis urged against the inner wall of the aorta said exterior portion can adhere to the inner wall of the aorta

16. The system of claim 15 further including an aortic stentless valve prosthesis configured to be coupled to said heart valve prosthesis support.

17. Heart valve prosthesis for placement in a valve of a patient's heart, said valve prosthesis comprising a surgical implant including a curved member and a skirt, said curved member having first and second ends and being adapted to form a partial ring along a portion of one of the valve annulae in the patient's heart, and said skirt extending along said curved member and depending therefrom.

18. The prosthesis of claim 17 wherein said curved member is flexible.

19. The prosthesis of claim 17 wherein said curved member is rigid.

20. The prosthesis of claim 17 further including a plurality of struts extending radially inward from said curved member.

21. The prosthesis of claim 20 wherein said struts are integrally formed with said curved member.

22. The prosthesis of claim 20 wherein said skirt has an inner perimeter and said struts terminate before said inner perimeter.

23. The prosthesis of claim 17 wherein said skirt comprises prosthetic tissue.

24. The prosthesis of claim 17 wherein said skirt comprises ePTFE.

25. The prosthesis of claim 17 further including fibrous mesh surrounding said curved member.

26. Heart valve prosthesis for placement in a valve of a patient's heart, said valve prosthesis comprising a surgical implant including a closed ring shaped member and a skirt, said ring shaped member being adapted to form a ring along one of the valve annulae in the patient's heart, and said skirt extending along at least a portion of said ring shaped member and depending therefrom.

27. The prosthesis of claim 26 wherein said curved member is flexible.

28. The prosthesis of claim 26 wherein said curved member is rigid.

29. The prosthesis of claim 26 further including a plurality of struts extending radially inward from said ring shaped member.

30. The prosthesis of claim 29 wherein said struts are integrally formed with said ring shaped member.

31. The prosthesis of claim 29 wherein said skirt has an inner perimeter and said struts terminate before said inner perimeter.

32. The prosthesis of claim 26 wherein said skirt comprises prosthetic tissue.

33. The prosthesis of claim 26 wherein said skirt comprises ePTFE.

34. The prosthesis of claim 26 further including fibrous mesh surrounding said ring shaped member.

35. Heart valve delivery apparatus for placing heart valve prosthesis in a patient's heart, said apparatus comprising:

a delivery device comprising a plurality of tube pairs arranged to support said heart valve prosthesis; and

a plurality of self-closing clips, each clip having an open configuration and a closed configuration and first and second piercing ends, each clip being ejectably mounted to one of said tube pairs with a first portion of the clip slidably postioned in one tube of the tube pair and a second portion slidably postioned in the other tube of the tube pair so that the first clip piercing end can be ejected from said one tube of the tube pair and said second piercing end can be ejected from said other tube of the tube pair.

36. The apparatus of claim 35 further including a plunger, each of said clips being coupled to said plunger.

37. The apparatus of claim 36 wherein said clips are laterally spaced from one another and arranged for parallel ejection.

38. Heart valve repair apparatus for placing heart valve prosthesis in a patient's heart, said apparatus comprising:

heart valve prosthesis comprising a prosthetic valve leaflet and a member supporting said leaflet; and

delivery apparatus comprising a support for said valve prosthesis and a plurality of clips ejectably mounted to said delivery apparatus support, each clip having two piercing tips extending into said member supporting said leaflet.

39. The heart valve repair apparatus of claim 38 further including a plunger, each of said clips being coupled to said plunger.

40. The heart valve repair apparatus of claim 39 wherein said clips are laterally spaced from one another and arranged for parallel ejection.

41. The heart valve repair apparatus of claim 38 wherein said clips have an open configuration and a closed loop shaped configuration, said clips being in said open configuration.

42. The heart valve repair apparatus of claim 38 further including a plurality of tube pairs, each clip having a first portion slidably postioned in one tube of a tube pair and a second portion slidably postioned in the other tube of said tube pair.